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THE PORT OF BUFFALO: WHERE THE WATER ROUTES AND TRUCKING ROUTES OF THE AUTOMOBILE CARRIERS MEET

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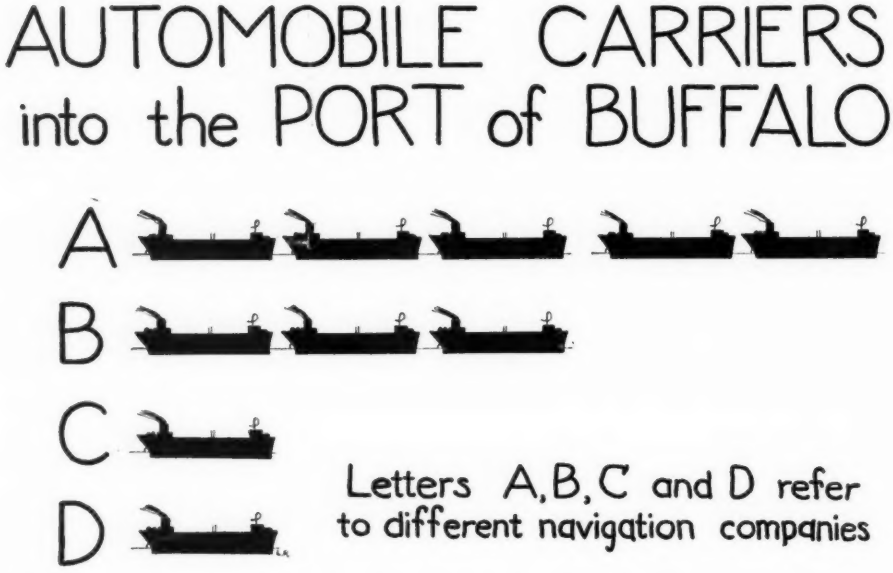
The Port of Buffalo has experienced four different changes in the character of water traffic in the last one hundred years. It was here that the pioneers back in the 1830's transferred their household goods from the canal boats to the sailing vessels which carried them westward to the frontiers in the Great Lakes areas. On these new lands some of the settlers logged off the land and others raised wheat. Those products of the farm and the woodland supplied important east bound cargoes. In the following years, iron ore also began to move along this traffic lane so that by 1910, iron ore and grain dominated the tonnage receipts. By the close of the next decade the automobile, a manufactured product, was moving eastward along with those earlier commodities.

RECENT GROWTH

The most rapid growth of the transportation of automobiles on the Great Lakes covers the period of the last four years. Today into the Port of Buffalo alone come 25 per cent of the automobiles shipped on the Great Lakes in the ten especially equipped automobile carriers of four different navigation companies. While these vessels carry the bulk of the traffic they do not account for the entire volume for other lines carry sixty to seventy-five cars on deck as a part of the mixed cargo, and, in season, the large passenger boats can carry about 125 new cars besides the seventy or eighty belonging to the passengers.

During the eight months of navigation as many as 200,000 cars have been received at the Port of Buffalo. Such a procession if placed bumper to bumper would extend almost across New York State. Years ago when cars were first manufactured, a few were

carried by one of the navigation companies but the number prior to 1920 was so small that the cargo was not listed as a separate item in the harbor receipts. A study of the graf shows the record for the last sixteen years. In 1920 the shipment for the entire season totaled as many cars as were unloaded in one month in 1936. The rapid increase of the last four years coincides with the highly organized trucking-forwarding service which had begun to operate in a small way between 1926 and 1929. Previous to that, dealers had the responsibility of the delivery altho there had been half-

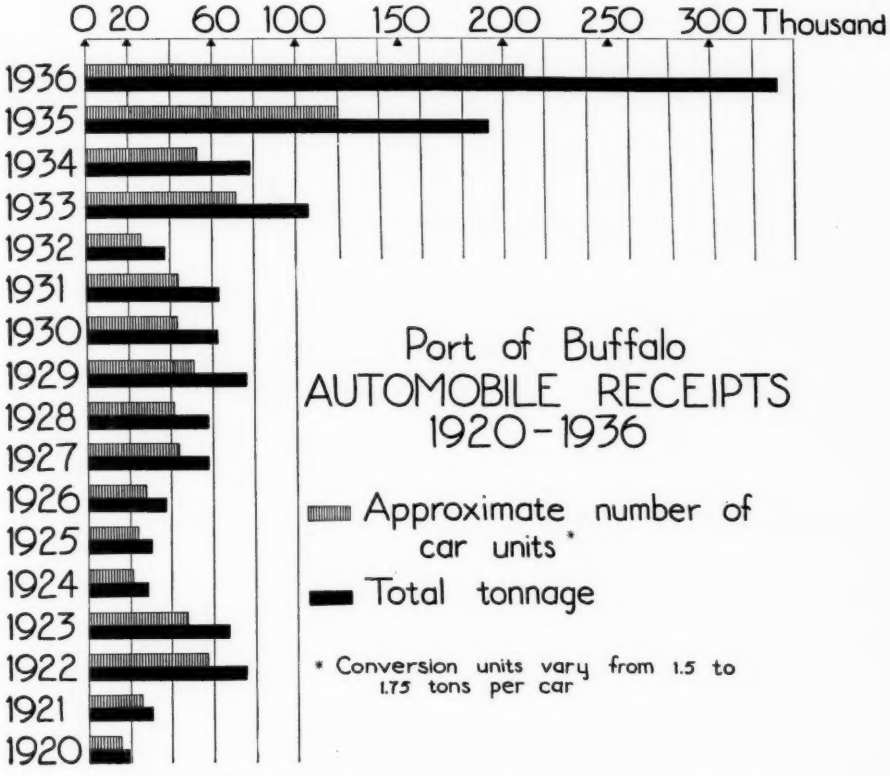


hearted attempts to organize a "drive-away" business. The present set-up is exclusively a "water carrier-trucking delivery" service. With the exception of trucks, cars destined for export do not come over this Great Lakes route nor do any complete delivery by rail out of Buffalo.

Shipment by Water

Altho some of the automobile shipments originate at ports on Lake Michigan most of them come from Detroit, 236 steamer-track miles west of Buffalo. In Detroit during the day as the cars roll off the assembling line they are driven to a storage yard having a capacity of a thousand units. By late afternoon the east bound vessel has docked and drivers start the procession of cars over the gangplank to the elevators which lower them into the two decks

below. No dunnage or bracing is necessary for the hand brake holds the car in place. Then the top deck is parked with cars which in stormy weather are secured by cables and chains. This cargo consists of 250 to 500 cars depending upon the size of the vessel and has been loaded within four or five hours. Before midnight the boat slips down the river and steams out across Lake Erie at a speed of nine to twelve miles an hour.



As the vessel pushes eastward preparations are being made for its arrival in Buffalo. Twenty to thirty-five stevedores hired on a four hour contract are notified. Coming into the harbor some twenty to twenty-four hours after departure from Detroit, the vessel may take a half hour to dock. If the City Ship Canal is used, there is a delay to lift two bridges and to navigate two miles along a channel 200 feet wide and about 20 feet in depth. No tug service is required or is necessary.

By midnight the vessel has docked, unloaded in two to four hours and is ready to return to the west end of Lake Erie for an-

other cargo of automobiles. During the height of the season boats arrive daily and not always at the midnight hour. The first twenty-five days of the season, March 25 to April 18, 1937, eighteen vessels brought full automobile cargoes into the Port of Buffalo. By the middle of July shipments reached 5,000 cars per week.

Trucking Service

At the time of unloading the problem of sufficient storage space would be serious if the trucking service were inadequate to keep deliveries continuously enroute. Cars are tucked into all available lots nearby and inside the warehouses in an effort to unload the boat. At the height of the season one will see the storage space always occupied even tho no cars are likely to stand about for more than a day after arrival. As rapidly as consignments leave new daily arrivals fill in the blocked space. Thus to the casual observer it would appear as if the parking yards were always full to overflowing and forwarding at a standstill.

The responsibility for completing the remaining link in the transportation of the cars now rests with the trucking companies of which there are more than a dozen, operating fleets out of Buffalo. This number is further augmented by truckers from the cities along the seaboard and the neighboring states to which cars are consigned. Of the six major trucking outfits, two are directly associated with the two assembling plants located in Buffalo and the others as a rule contract for deliveries with the distributors in distant cities.

The trucking fleets whose combined registration numbers well over five hundred, consist of a single unit, ten to twenty units, and some over seventy units. Those who have but a few trucks may be independent operators or a division of some large mid-western concern that has a total fleet of hundreds or even a thousand. One local company started business in 1929 with two trucks and today has over a hundred units on the road. There are various styles of tractors and trailors which makes for a difference in the loading arrangement. It takes a truck driver some thirty to sixty minutes to load the trailer. Some companies have inspectors who check the cars to see that they are firmly anchored and not in gear, to see that the tarpaulin coverings which prevent scratching from tree branches are securely fastened, to write out the load inventory and to check the driver's daily report card.

The standard equipment is a one and one-half or two ton truck

which may have been rebuilt in the shops of the trucking company. The tractor-trailer length is usually forty feet tho some are five feet longer. The motors give 70,000 to 90,000 miles of service and are frequently overhauled. Some companies make replacements every year while others operate the tractor two seasons. The gas consumption runs seven to nine miles per gallon depending upon the route.

DELIVERY AREAS

The areas served by the trucking outfits lie to the eastern seaboard and south as far as the Potomac. One company delivers in fourteen states as far as Portland, Maine and Philadelphia. Another delivers only outside New York state into Pennsylvania, New Jersey, Maryland and the District of Columbia. A third company handles exclusive delivery of some makes of cars in New York outside of Metropolitan New York, avoids some of the New England states and carries the export trade of trucks and a few local cars.

The farthest distance to which automobiles are trucked from the Port of Buffalo is well over 475 miles which takes some twenty hours of driving outbound and possibly sixteen hours on the return trip. Rest stations are provided at spaced intervals. Some drivers take the load the entire distance while others have a 200 mile run. At this point the tractor is detached and another driver hooks up and rolls on with the load. The relieved driver has his rest then hooks the tractor to an empty trailer and returns to his station. Another arrangement provides for a rest until the unit returns to that point.

GEOGRAPHIC INFLUENCES

The historic water-level route across New York used by barge, train and vehicles is followed by the trucker if the destination is New England or the lower Hudson Valley; if the destination is Philadelphia or Washington then the route is over the hills southward where there is less traffic but where grades and curves increase the gas consumption and decrease the speed. Here too the weather hazards are greater than along the canal route. Low temperatures, frequent showers, sleet, ice, fog, and those risks of travel associated with the highways of the Appalachian Plateau constitute some of the problems of the truck driver. One company manager stated that the Sunday pleasure driver is the worst hazard because he "isn't going anywhere in particular and he drives that way."

The weather likewise affects the lake portion of this carrying-

delivery service for the seasonal nature of navigation determines the number of automobiles entering the Port of Buffalo. The maximum length of the open season has been nine months and two days with the minimum of seven months and ten days. If the Port of Cleveland should open before the Port of Buffalo, then some truckers drive the 200 miles for a load. When the lakes close in late December some companies discontinue service while others operate a few units that go the entire distance to Detroit. Numerous state laws and regulations regarding equipment tend to restrict the areas served by some companies. It is of interest to note that the recent introduction of new models and styles in the autumn has served to keep the shipping business going at full speed as long as the water is open.

ADVANTAGES OF THE WATER-TRUCK HAUL

What are the advantages of this water-truck haul? The rates on the water portion of the haul, plus the trucking costs, plus the delivery service feature, compete successfully with rail rates. If the destination is Buffalo the water rates are $3.00 to $6.00 more per unit than if the seaboard or an intermediate point is the destination. The reason is rather obvious as the additional trucking costs would boost the total carrying charges to a level where competitive rates would no longer exist. The cost for a haul of 400 miles overland is $26.70 per unit. This service evidently pays its way. In contrast look back to 1912-1913 when a motor truck transport from Akron, Ohio to Buffalo "took three days and used up one-half the pay load of tires in making the trip of 225 miles."

The differential between the rail rate and the water-truck rate diminishes the greater the distance from Buffalo, until the gain to the distributor falls to less than one dollar per unit, and in some cases the combined rate exceeds the all rail rate. In spite of this paradox the distributor may favor the truck delivery. Some reasons for this are:

1. He carries reduced inventories and stocks together with reduced storage space, since deliveries can be on the road and their arrival staggered to meet his convenience.
2. He has less overhead and reduced force since the trucker delivers directly to the showroom. He is also saved freight car handling.
3. Perhaps the most important of all, he has the benefit of

consolidated and assorted shipments at reduced costs and with quicker service.

FUTURE

What is the future of this newer phase of Great Lakes traffic? Some Detroit automobile manufacturers have acquired frontage along the River Road where there are extensive level areas at lower prices than those sites nearer the Outer Harbor, and yet are accessible by means of the canal and the east channel of the Niagara River. At present an axle and motor plant is under construction along this River Road. These facts point to the growing importance of Buffalo as the eastern terminus of the Lake automobile traffic. Here the raw materials from the Middle West, the Upper Great Lakes Region and the nearby coalfields can be conveniently assembled. A second important advantage is the nearness of this area to the seaboard with its large centers of population, which provide a market for the cars. Additional features which serve to attract the manufacturers are the labor supply, related and already established industries and capital. This decentralization will probably bring about some shifts in certain types of the water traffic. The effects of this expansion on the trucking business remain uncertain but, at any rate, the growing automobile industry nearer the eastern markets is being watched with interest.

STATISTICS

Courtesy of the office of the United States Army Engineers, Rivers and Harbors, Buffalo, New York.

Courtesy of the several navigation companies and trucking companies operating out of Buffalo.

TEACHING GEOGRAPHY THRU COMPARISON: THE PHILIPPINE ISLANDS AND THE HAWAIIAN ISLANDS

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We gain much information thru inquiring how places *resemble* each other, and how they *differ* from one another. Studying regions of the world by comparison not only saves precious time, but greatly assists the memory. Comparison develops judgment.

The important island possessions of the United States—the Philippines and the Hawaiian Islands—have certain strong points of resemblance, both groups being tropical islands. However, there are contrasts that distinctly differentiate them from one another.

After studying each group separately, the review may very profitably be taken up in a lesson involving comparisons of the two. This is not a simple procedure. It requires organization, and it tests both the teacher and the pupils. The whole field need not be covered, and details may be "trimmed off," so to speak.

COMPARING THE PHILIPPINE ISLANDS WITH THE HAWAIIAN ISLANDS

I. Location
P.I.—North Tropical Zone. 5°-22° N. Lat. (Approx.) Near S.E. Asia
H.I.—North Tropical Zone. 19°-23° N. Lat. (Approx.) Mid-Pacific

II. Area
P.I.—115,026 sq. m., about the size of Arizona. More than 5000 islands.
H.I.— 6,449 sq. m., about the size of Connecticut. 9 principal islands.

III. Surface
P.I.—Volcanic mountain peaks, deep valleys, fertile volcanic soils, coral reefs.
H.I.—Volcanic mountain peaks, deep valleys, fertile volcanic soils, coral reefs.

IV. Climate
P.I.—Tropical. Monsoon winds on west coast. N.E. trade winds on east. Typhoons.

H.I.—Tropical. N.E. trade winds thruout the year. Cooled by altitude.

V. Exports

P.I.—Raw materials: sugar, Manila hemp, copra, tobacco, rice. Exports greater than Imports. Embroideries, laces, hats, pearls, lumber.

H.I.—Sugar, pineapples, fresh and canned, bananas, coffee. Exports greater than Imports.

VI. Imports

P.I.—Manufactured goods, cotton, iron, steel, wheat, flour, meat, dairy products.

H.I.—Manufactured goods, cotton, iron, steel, wheat, flour, meat, dairy products, autos, radios, oil, etc.

Both countries have tariff advantages.

VII. Population

P.I.—About 13,000,000 (1937). Great Variety of races. Many languages and dialects. Manila, 320,390 (1930)

H.I.—About 368,336 (1937). Native Polynesian, Asiatics, Europeans, Americans. English language. Honolulu, 137,582

VIII. Present Government

P.I.—Commonwealth. Native legislature and governor. Moving toward complete independence.

H.I.—Territory of the United States. Governor appointed by the President of the United States. Territorial legislature.

IX. History

P.I.—Discovered by Magellan in 1521. Ruled by Spain until 1898, at close of Spanish American War, when they became a possession of the United States.

Schools, sanitation and internal improvements, as road-building.

H.I.—Discovered by Capt. James Cook (English) 1778. Named Sandwich Islands.

Islands annexed to the United States at their own request, 1898.

Americans in the H.I. had set up a republic before the annexation.

Very favorable tariff relations established, promoting the sugar industry.

Naval base and coaling station. Radio station.

"Cross-Roads of the Pacific."

X. Use of Panama Canal

P.I.—Raw products: hemp, sugar, copra, moving to southern and eastern United States.

H.I.—Easy short route to San Francisco established before canal was built.

Sugar taken to San Francisco refineries. Pineapples distributed largely on the western coast of the United States.

Extensive tourist visitation, enroute east and west thru Panama Canal.

American navy base at Pearl Harbor, accommodates ships that use Panama Canal.

XI. Summary:

P.I.—Because of their nearness to the equator, the Philippine Islands are more tropical than the Hawaiian Islands. Typhoons are tropical storms. Because of their nearness to the great continent of Asia, they come under the influence of the monsoons, seasonal winds bringing rain in summer. Their rice crops resemble those of southern China. The great numbers of population groups are due largely to Asiatic settlers, invading the Islands during the centuries. No uniform language developed during the three centuries of Spanish rule. The people are chiefly farmers. Terrace farming is a remarkable achievement. During the American regime, road-building has been one of the greatest achievements in the development of any country in the world, and will tend to unify the people.

H.I.—The native Polynesian people attained the highest development of any of their race, because of their stimulating climate and isolation from invasions. The Islands are the most temperate in climate of any of the tropical islands, because of their altitude. They receive the benefit of the Northeast Trade Winds, and are free from storms. Most of the rain falls on the windward side of the mountains.

The written language of the Hawaiians was the work of New England missionaries who settled in the Islands in

1820, established schools, and cooperated with the native ruler, Kamahaha, who desired Western civilization.

The sugar and pineapple industries are in the hands of American and European capitalists, who established sugar plantations when free-trade relations with the United States were enacted by Congress. Sugar was admitted free into the United States. Pearl Harbor was ceded to the United States as a naval base.

TEST QUESTIONS

I. Which group of islands, the Philippines or the Hawaiians, derives the more benefit commercially from the Panama Canal? Explain.
II. Why were sugar refineries established in California? Explain.
III. Which end of Panama Canal, Pacific or Atlantic, admits the more raw products? Explain.
IV. Why did San Francisco become the leading United States Pacific seaport? Give two chief reasons.
V. Which has the greater advantage for Oriental trade, San Francisco or Seattle? Explain.

COMPLETION TEST

I. Because the Philippine Islands are near the continent of ——1—— and are in the ——2—— zone, they are affected by the ——3—— winds for the ——4—— of the year.
II. In the ——5—— season the ——6—— and the ——7—— winds coincide.
III. Manila is on the ——8—— coast of the Island of ——9——.
IV. ——10—— is the entrepot city of the Islands.
V. The Philippine Islands have a ——11—— origin, like that of the ——12—— Islands, Territory of the ——13——.
VI. The United States' Construction of ——14—— in the Philippine Islands is one of the greatest achievements in the world's history.
VII. ——15—— is derived from the abaca tree.
VIII. ——16—— is derived from the ——17—— of the coconut tree.
IX. The staple food of the Filipinoes is ——18——, much of which is grown by means of ——19—— farming in the highlands.
X. The Philippine Islands were ceded to the United States in 1898 by ——20——.

1. Asia	6. N.E. Trades	11. volcanic	16. copra
2. torrid	7. Monsoons	12. Hawaiian	17. fruit
3. monsoon	8. west	13. U.S.	18. rice
4. a part	9. Luzon	14. roads	19. terrace
5. winter	10. Manila	15. Manila hemp	20. Spain

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INEFFECTIVE GEOGRAPHY TEACHING—WHY?

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This condition has readily been admitted by teachers and supervisors as existing in our New York City schools. It was in an effort to determine possible causes for the situation that the writer conducted a questionnaire survey in November, 1935, of all the geography teachers and principals in the Junior High Schools in New York City. The results represent replies from 59 schools or 82 per cent of all New York City Junior High Schools. They may serve to indicate some likely causes for the ineffective teaching of geography in our schools.

There are prescribed minimum requirements for the time allotted to geography, three periods per week in the seventh grade and two periods per week in the eighth grade. Nevertheless, a great variation in practice exists. There are some schools that do not meet the prescribed minimum time allotment. There are some schools in which the subject is not taught in grades in which it is listed as a prescribed subject. This may be due to the lack of a sufficient number of teachers trained in geography but the existence of an eligible list precludes this possibility. The variation in time may be due to local conditions which warrant the adjustment. It may also be due to the individual principal's own opinion as to the value of the subject. Regardless of the cause, the condition does exist. We cannot fail to recognize that an inadequate time allotment may undoubtedly be a cause of poor teaching of geography.

Teachers appointed to the Junior High Schools of New York City are licensed to teach special subjects, i.e., geography, history, mathematics, etc. Geography, however, is taught by the holders of 17 different licenses. Only 28 per cent of the geography teachers have been licensed to teach the subject. This condition may be due to the lack of a sufficient number of licensed teachers of the subject but this reason has already been discountenanced. The condition may be due to an assumption on the part of school authorities that Junior High School teachers coming chiefly from the lower grades, have had experience in teaching general subjects. In some schools, a social studies course is organized and principals may then desire to have geography teachers licensed in history. Almost three-fourths of the geography teachers do not hold licenses indicating their special fitness to teach the subject. The assignment of geog-

raphy classes to teachers with licenses and interests wholly unrelated to the subject may be a cause of failure to teach the subject properly.

More than one-fourth of our geography teachers have but one geography class per week. About three-fourths of the geography teachers have three classes or less per week in geography. This condition may be due to program problems which compel this distribution of classes. There may also be a lack of capable geography teachers which might cause a spread of the geography classes among many teachers. Furthermore, a principal may possibly believe that each teacher should teach her own class in geography since it is scheduled for only two or three periods per week. It then follows that most geography teachers have between two and nine periods per week in the subject. The junior high school program contains thirty-five teaching periods per week. If from two to nine periods are devoted to teaching geography, then the major part of the teacher's program is allotted to the teaching of another subject or other subjects. It is quite possible that a teacher with only one or two classes in geography will give the major portion of her energy to teaching her specialty or the subject requiring the greater part of her program. It is, therefore, quite likely that this pevailing practice of spreading the geography classes among many teachers giving each relatively few classes, may also be a cause of poor teaching of geography.

The investigation revealed that there is relatively little use of magazines by our geography teachers. Thirty-eight magazines are used in teaching geography. There are but eight of these that are used by more than five of all the geography teachers in the New York City Junior High Schools. Therefore, about two-thirds of the magazines are being used by only one or two teachers. About one-fourth of the geography teachers use no magazines at all. The results indicate a general lack of utilization of a type of current literature which undoubtedly might aid in vitalizing the teaching of geography.

Approximately nine-tenths of the geography teachers have traveled to the various continents, Canada, or west of the Mississippi River. The extent of the travels varies with the individual. However, extensive and varied travel is of inestimable value to the geography teacher. A complete or almost complete lack of first hand travel experience may be a contributing cause to ineffective teaching of geography.

About three out of every four geography teachers and Junior High School principals are in favor of continuing the teaching of geography as a separate subject. It is not to be supposed that the approximate identity and proportion in both groups are entirely due to the influence of the pressure of the principal's opinion in the school. Examination of the questionnaires received from the various schools indicates a division of opinion within many schools. There may, however, be some schools in which the teachers' replies were influenced by their knowledge of the principal's attitude in this respect. There may also be some inexperienced teachers of the subject whose replies are conditioned by a training recently obtained at college. There may be some teachers whose replies merely reflect the opinion of some other members or group of the faculty. The decisions of some teachers may not be the result of a deep consideration of the relative merits of the issue. Nevertheless, as has been shown previously, approximately one of every four geography teachers has not indicated a preference for the continuance of the teaching of geography as a separate subject. These teachers believing in the effectiveness of a social studies course may not be interested in the teaching of geography as a separate subject. This lack of teacher interest may readily evidence itself in poor teaching.

About three-fifths of the geography teachers that are training school graduates have not had geography courses beyond training school. Almost half of the geography teachers that are college graduates have had no geography courses at college. About one of every six geography teachers has had no geography training beyond elementary school. There is a definite lack of intensive training in the subject among geography teachers. This may be attributed to many causes. Some teachers may believe that geography is only an elementary and junior high school subject. Since geography is not generally continued in high school, it is therefore unimportant and need not be studied intensively. Authors of geography texts have contributed to this lack of interest. There have been many bulky geography texts that not only present a forbidding appearance but also contain a verbose, technical content much of which might have been omitted. Colleges and teacher training institutions have also contributed to this lack of interest by not developing an interesting well-organized set of courses in the subject. The lack of specialized professional training in geography which we find so extensive among geography teachers provides an inadequate background that may be the cause of ineffective teaching.

This survey indicates that the ineffective teaching of geography may be due to inadequate time allotment, insufficient number of specialists trained to teach the subject, the teacher's or supervisor's lack of interest in teaching geography as a separate subject, too great a spread of geography classes among teachers regardless of interests or licenses, lack of utilization of current magazines as a teaching aid, and the lack of travel and professional training among geography teachers. The problem then remains for the supervisor to determine which of the possible causes apply in particular situations. Then a suitable remedial program should be planned and effected with the sympathetic cooperation of the geography teachers. If this procedure is followed, it may be that we may remove some causes of the ineffective teaching of geography in our schools.

POPOCATEPETL

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Popocatepetl is one of the famous mountains of North America. Who does not remember trying to spell its name during schooldays? The Mexicans who live on it and near it do not even try. They just call it Popo. Old Popo is a wonderful sight, and so is its mate, Ixtaccíhuatl lying just to the northeast. Popo is shaped like a cone and rears its peak so far above the plateau of Mexico that it is always covered with snow. Ixtaccíhuatl is not much lower, but its summit is irregular to such an extent it resembles the body of a sleeping woman, robed in white, the arms folded upon her breast. Popo rumbles at infrequent intervals and puffs out clouds of steam so its name means "uninhabited mountain that smokes." Ixtaccíhuatl is extinct, well-suited to the name "sleeping woman."

Location

When one stands upon the summit of Popocatepetl he is able to look northward into a valley 10,000 feet below, or southward into another valley 11,000 feet below. North of Popo are the plains of Mexico, in the Valley of Mexico which is on top of a plateau over 7,250 feet high. South of Popo are the plains of Puebla in the Valley of Puebla still on a part of the Mexican plateau, but over a thousand feet lower than the portion occupied by the Valley of Mexico. To the west and northwest of Popocatepetl is a continuance of the vol-

canic range of which it is a part. Tall volcanoes like Ajusco, Nevado de Toluca, and Colima rise far above the plateau and, like Popocatepetl, they are but stumps of former larger mountain masses. To the east and northeast of Popo and Ixtaccíhuatl are Malinzin and Orizaba, the latter being the highest volcano in Mexico. The whole volcanic range which extends from Cape Corrientes on the Pacific, in a crescent shape, swinging south of Mexico, D.F. until

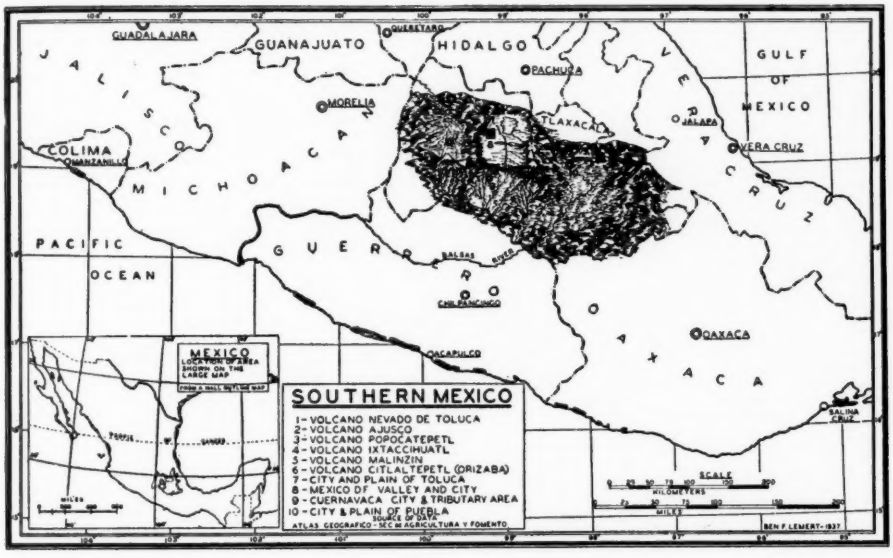

Fig. 1

it ends near Jalapa just north of Vera Cruz on the Gulf of Mexico, hugs closely the location of the 19th parallel.

LAND UTILIZATION

Popocatepetl presents an inspiring view when seen in the morning from the plains of Mexico, the plains of Puebla, or from Cuernavaca. However, the enchantment it lends to the scenic beauty of Mexico, D.F. is of small importance when compared with the functions both Popocatepetl and Ixtaccíhuatl perform in the daily life of millions of Mexicans.

Climatic Influence. The height of the volcanoes causes moisture-bearing winds to rise along their slopes, and other following winds to pile up over these masses of accumulated air much as the water in the waves of the ocean rushes over that held back by the friction of the beach and bursts into breakers. As the air rises it cools and reaches a temperature where it must precipitate some of the mois-

ture it contains. Where the layers of air are still out over the plains of Mexico and Puebla, the precipitation falls in the form of rain. At the higher elevations on the volcanic slopes the temperatures are so low much of the precipitation is in the form of snow or sleet. Temperatures in the sun on the plains of Mexico and Puebla are high for the sun shines upon these regions vertically at noon twice a year. The intensity of the insolation speeds up evaporation and the 20 to 30 inches of annual rainfall is not enough to produce subsistence for so many people.

The snow and ice on the volcanoes piles up and large quantities melt during the day. The water from the melting snow and ice flows down the sides of the mountains, and seeps thru the porous debris covering their slopes, forming rivers. The rivers flow out upon the plains providing water for irrigation. Most of Mexico is a land where economic utilization of the soil depends upon irrigation.

Soil Contribution. Popo and Ixtaccíhuatl, during past eruptions, have dropped layer after layer of ashes upon the neighboring plains. The streams flowing down their slopes are continually carrying large amounts of material out upon the plains where it is spread out over wide areas of gently sloping to level land. These volcanic sediments are rich in mineral elements and weather into the rich black and dark, reddish brown soils which produce the corn, beans, wheat, vegetables and fruit. Were it not for the rich soil and the supply of water for irrigation, the plains of Mexico and those of Puebla would likely be arid, grazing regions capable of supporting few people. Today they support millions of people who cultivate the areas intensively.

The Plains Vegetation. The plains of Puebla at the foot of Popocatepetl and Ixtaccíhuatl slope gradually away from the volcanoes until wide areas are almost flat. The elevation of these plains being lower than that of the Valley of Mexico, temperatures are higher. The climate is subtropical and produces vegetation which finds its optimum conditions in such temperatures. While oranges and palms are plentiful, the predominant crop is corn. Everywhere one looks stand the corn fields interspersed with fields of beans. At Cholula, the city of churches, where some of the 365 churches are built on pyramids, the corn grows right up the sides of the pyramids until it seems to be endeavoring to hide the church. One may stand in front of a church on a pyramid and count no less than forty or fifty churches within his range of vision, all seeming to protrude right up out of the cornfields.

The rivers in this region are choked with volcanic debris. They

present the appearance of braided streams, having carried more than their volume and velocity could handle, causing them to aggrade their courses. Many of them have built their beds up above the plains several feet, their channels being broad and only a few inches deep. The water spreads out over the choked channels in broad shallow sheets but the seepage thru the porous debris and the water turned into the ditches makes the corn grow.

Fig. 2. Looking up the slopes of Ixtaccíhuatl from the Puebla side. At the extreme left is the volcano, Popocatepetl. The Puebla side always seems much clearer than is the case on the side facing the Valley of Mexico. The plains of Puebla are lower and warmer.

Fig. 3. Corn and beans occupy most of the land at the base of the volcanoes. Many cinder cones stick up from the corn fields, some of them covered with vegetation.

On the sides of Popocatepetl and Ixtaccíhuatl facing Mexico, D.F., the plains resemble those of Puebla but they are higher, about 8,000 feet above sea level. The temperatures are fairly high in the noon-day sun, but the nights are chilly, even cold. Afternoons and evenings between May and October when the rains are frequent, are likely to be as chilly and disagreeable as a rainy day in London, England.

There are many towns on the lower slopes and plains in the Valley of Mexico close to the foot of the volcanoes. Here, too, the predominant crop is corn altho much land is devoted to the production of fruits and vegetables. Mexico, D.F., with its million inhabitants affords a large market for food products. As the Valley of Mexico is just a great depression between mountains, a depression that has been partially filled by debris eroded from those mountains and materials erupted from the volcanoes, it depends for much of its moisture upon streams from the mountain slopes and seepage of slopewater which wells up in the valley in the form of

lakes. When precipitation is light, the lakes dry up. When it is heavier than usual they rise and have to be drained by canals. One of the lake districts, Xochimilco, where tourists ride on canals between what were formerly floating islands, produces a large quantity of vegetables and flowers. The utilization of the land between the canals is extremely intensive.

The Wheat and Grazing Area. As one ascends the slopes of the volcanoes the corn and bean areas change to forests of oak and other hardwoods with here and there an area of grassy meadows. These are at elevations of nine or ten thousand feet on Ixtaccíhuatl, altho on portions where the topography is very rough the forests may start at lower elevations. The meadows are occupied by large herds of cattle which must serve as meat animals for there is no sign of a dairy industry. The Mexican people are not large consumers of dairy products, altho some of the Indians have their own cows and sell quite a bit of milk in addition to that which they consume.

A few hundred feet above the town of Amecameca on the side of Popocatepetl are extensive wheat fields. At this elevation it is too cool for corn and more than likely too wet, especially between May and October. During that period the skies are mostly cloudy with a cold drizzling rain beginning about noon and lasting the rest of the day and night. Often the clouds are so low they hide the wheat fields. The soil used for the production of wheat is composed of fine, gritty particles, black in color. Due to its porosity the rainwater sinks as fast as it falls. There are no puddles in the fields and one hardly gets his shoes muddy as he walks across them. Even the road, which looks as if it would be extremely slippery when wet, affords good traction during the rainfall.

The fields are plowed during the summer, planted in August and the wheat grows during a cool, moist period tapering off into drier weather during March and April when the harvest time comes. Altho these fields are far south of the Tropic of Cancer, they are usually covered with snow sometime between October and May. The plowing, like most Mexican farm work, is done with very crude implements. A beam yoked to a team of oxen, the rear end of the beam fastened to a piece of wood having an iron point, is used to break the ground. The wheat is cut with a sickle or a scythe and threshed just as it is threshed in Spain. At intervals about the fields are circular areas or platforms of hard-packed earth where the straw is spread out. Oxen attached to drags or wooden rollers walk about the circle followed by men with two-pronged wooden

forks. The men throw the straw into the air. The wheat, being heavier, falls first, part of the chaff being blown off to one side. The grain is gathered and put into bags to be carted away, or piled up on the floor and covered with straw to keep the rain off. Here and there thruout the fields are the huts of the laborers. The huts are constructed of straw and sticks and have thatched roofs. At frequent intervals one also sees small tepee-like huts of straw which serve as shelters for the workmen during the frequent rains.

Fig. 4. A wheat field over 9,000 feet up the side of Popocatepetl. The soil is deep black and composed of very fine gritty particles thru which water sinks rapidly. The laborers were preparing this field for planting in August.

Fig. 5. A close-up view of a threshing floor. The straw at the right protects some sacks of wheat. The straw is cut with a sickle, spread upon the floor, oxen or burros dragging rough rollers crush it, and men follow them throwing the straw into the air. The grains of wheat fall to the floor and are scooped up. The clouds were just above our heads at this spot.

Some of the wheat fields extend right up the mountain side to the forest cover. At other places large areas in this section are covered with short grass and wildflowers. One can see thousands of acres of such land totally unused. This is not strange for such sights are common in Mexico.

The High Forests. At about ten thousand feet elevation coniferous forest takes possession of the slopes of Popocatepetl. As one climbs thru the forest it gets denser and the trees get bigger, for this is a belt of heavier rainfall with temperatures not too cold for forest growth. There is a point however, where maximum size and density of forest vegetation is reached. Upward from this point the trees begin to get smaller and to thin out. The change is not due to lack of moisture but because temperatures are approaching the point at which trees no longer survive. The spaces between the

trees become larger and are covered with rich grass. The areas look like parks, a park forest area, and are occupied by cattle. This is the region where the fine bulls trained for the Mexican bullrings graze. Hundreds of them wander about the high meadows while the Indian herders crouch beneath grass shelters to keep out of the cold wind and rain.

Figs. 6 and 7. A street scene in Amecameca. The entrance to the market is thru the wall at the left. At the right is the plaza. The street, once cobbled, is now covered with debris and full of holes. Note the woolen serapes carried by the men. Even at noon, the air here is cool.

The park forest dwindles as elevation increases, the trees become smaller and smaller until they are no more than masses of coniferous vegetation hugging the ground to take advantage of moisture and sun temperature and avoid the wind. The grass, too, changes, and while it extends farther up the slope than the trees, it thins out and finally assumes the form of bunch grass. This is the end of vegetation for the snow and ice take possession of the slopes at an elevation between 14,000 and 15,000 feet during the summer. This is a tropical location latitudinally, but the terms summer and winter are appropriate because of the influence of elevation. During the winter months the snow extends far down the sides of the volcano.

The Area of Polar Climate. With the disappearance of vegetation and the appearance of snow and ice one enters the region where it is always cold. The sun may shine for a short time early in the morning and its rays feel hot. The air is always icy. Between May and October clouds obscure the peak, aided by snowstorms and

drizzling rain. In fact the best place to see Popocatepetl is from the plains at its foot. One may climb the entire distance to the top without being able to see the peak and much of the time during the last three thousand feet he cannot see fifty feet in any direction. He has climbed thru dripping forests, waded thru wet pastures, climbed down into deep fissures and up out of them, knee deep in black volcanic sand. He stumbles, for the last few hundred feet below the snow line, over masses of rock and gravel, some of the stones rounded, others sharp. He fastens spikes to his shoes and braces himself with a pike, climbs fifty feet and pants for breath, fifty more feet and gasps for breath, hoping to have enough strength to reach the crater. The lack of oxygen causes intense fatigue. When he reaches the lip of the crater, it is usually cloud-filled. The snow extends right on down into it. There are clouds above, below and all around with little pellets of ice, the form which snow takes at high elevations, dropping out of the clouds like a rain of shot. There is nothing to see under such conditions.

Fig. 8. A stream in the plains of Puebla, the volcano, Ixtaccíhuatl in the background. Note the stream channel choked with volcanic debris, the water spreading aimlessly across the stream bed. The bed of the stream is a few feet higher than the plain, the stream banks barely holding the water from running down over the corn fields.

During the dry season, between October and May, the climb is more difficult due to the snow extending farther down the mountain side, but the view from the summit of the mountain is magnificent. It's a mass of purple-hued mountains set with emerald green valleys, studded with snow-capped volcanoes, between which the rivers resemble silver threads. The deep blue dome of the sky seals the horizon all around.

The climb is worth while if it is not cloudy.

NEW ENGLAND STATES PROBLEMS

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In keeping with a previous announcement the following problems are presented. For method of presentation and theory see, "An Effective Problem Method," JOURNAL OF GEOGRAPHY, November, 1937.

Problem: Why is New England one of the greatest manufacturing areas in the world, even tho it has no coal and few raw materials, both of which are necessary for industry?

1.

During the long cold winters, the people of early New England made many things in their homes. From the hides of their cattle they made shoes, and from the wool of their sheep they made cloth. By doing these things in their homes they learned to manufacture.

2.

By 1750 many of the people who lived on the coast moved to the thousands of waterfalls along the rivers. At these water wheels and factories were built. The things the New Englanders learned to manufacture during the cold winters in their homes, they did more easily with power from the falls.

3.

By 1850 the manufacturer had learned to use coal to run his machinery. From the coal fields of Pennsylvania and Virginia came shiploads of coal to run the factories of New England. Not only is New England well located to receive its supply of coal, but its many good harbors, make it easy for ships to bring cotton from the southern ports, and hides and wool from Argentina and Australia. The many railroads of New England carry the manufactured articles to the over 8,000,000 people in the New England States and to the 26,000,000 people in the Middle Atlantic States. It is, therefore, located close to its source of power and to its markets.

4.

Not only did the people of New England start home industry early, but the textile manufacturing machinery was first built in

1790 by Samuel Slater, a New Englander. In Pawtucket, Rhode Island were located the first cotton spinning and weaving machines in the United States. Much of the machinery which is used is invented and made in the New England States.

5.

On the Merrimac River are many textile cities making cotton into cloth. In New Hampshire are the textile cities of Nashau and Manchester. In Massachusettes are the important textile cities of Lowell and Lawrence.

In Lawrence, Massachusetts and in Woonsocket and Providence in Rhode Island are many woolen factories. In these factories sweaters, blankets and rugs are made. Probably the rug in your home or the sweater which you are now wearing was made in one of these cities.

6.

Some of the skins or hides of cows and other animals are brought to New England. After the hair is removed, the skin is soaked in tannic acid or other substances, which change the hide to leather. Finished leather comes from Wisconsin, Pennsylvania, Australia and South America to the shoe factories in Lynn, Haverhill and Brockton in Massachusetts. Probably the leather suitcases which your family used on its last vacation were made in New England.

7.

Thousands of small articles are manufactured in New England. Among the most important metal articles manufactured are jewelry, watches, tools, needles, wire, cutlery, screws and locks. There is a good reason for New England having chosen to make light metal articles rather than heavy ones like locomotives. The cost of heavy articles is due to the great cost of transporting them. Since New England must import all its metal and fuel, it would be impossible to make a living on such manufacturing. Instead, they manufacture watches and jewelry which require a great deal of skill. For example, a steel rail cost little more than the pig iron from which it is made, but a watch may cost a thousand times as much as a few ounces of the metal from which it is made. In the watch we pay for the skilled work, in the rail we pay for the unskilled labor and the steel in it and the cost of transporting it. In this way New England sells more of its skilled labor and does not need as much raw material or coal for power.

8.

In Massachusetts where there are textile factories, we find along the Connecticut River paper mills making paper from rags, which are easy to get. In Maine the forests supply wood for paper. The spruce and hemlock in Maine, New Hampshire and Vermont are disappearing; therefore much pulp wood must be imported from the Scandinavian countries and Canada.

9.

The New England fathers and mothers taught their sons and daughters the various occupations. Therefore, each generation of workers became more and more skilled. Today we find many skilled workmen in New England because for many years parents trained their children.

The children chose the following titles for the above nine paragraphs:

1. Early need for manufacture
2. Many small waterfalls
3. Nearness to coal fields and markets for New England products
4. Invention of machinery
5. Textile industry
6. Leather industry
7. Making small metal articles to save shipping costs
8. Making paper
9. What our ancestors taught us.

* * * * *

Problem: Why have the people of New England realized the importance of their forests?

Introduction

New England's forests are very extensive, those of Maine covering about three-fourths of the state. Spruce and fir are now the principal types for commercial logging operations. Most of the tracts have been cut about once every twenty to fifty years since the middle of the 17th century, first for saw lumber and ship masts, now for pulp wood. The logs are hauled by tractor, bobsled and train to a river. There are many rivers in New England suitable for log driving, as well as those in which four foot length logs can be rafted into one large boom and guided downstream at the end of

a long rope tied to a tugboat. In some rivers dams have been built to help regulate water levels, as well as develop power for the saw and pulp mills. Some of the mills are partially dependent upon foreign countries, especially Canada and the Scandinavian countries, for raw materials either in the form of pulp wood (four foot cordwood) or pulp (wood that has been ground and baled).

The forests, underbrush, and surface waters also serve as breeding grounds and homes of wild life, all of which help make New England attractive to tourists. The maples, especially of Vermont, furnish a sap for maple syrup and sugar, and their vividly colored autumn foliage adds to charm of the New England countryside. The forest leaves and branches, also the loose soils and leaf molds, all help reduce the run-off when it rains, and thus help prevent floods, and help check the washing away of soils and waste rock.

This overview of the importance of New England's forests is subdivided for convenience of study in the paragraphs that follow.

1.

Lumber is one of the most important products of the forests. New England produces only about 29 per cent of the lumber it uses. The other 71 per cent must be brought from the South and West where most of the lumber of the United States is cut. New England must pay about $13,500,000 a year to transport this lumber from these distant parts of the United States.

2.

In the spring of the year many farmers in Vermont and a few in the other New England States, bore a hole in the sugar maple, into this hole they put a hollow reed or a trough made of bark, from these the sap flows into buckets. The sap is then taken to a factory where it is made into sugar and syrup.

3.

The paper mill depends upon the forest for both its raw material and power. About a hundred years ago the amount of paper used was small. All of it was made from cotton, linen rags, hemp and other fibrous materials. Today we use large quantities of paper. Nine-tenths of the paper used in newspapers, magazines, books and in a thousand other ways is made from wood. Making paper from wood has made it cheaper, but this has taken much of our forests. For every person in the United States, we use two hundred pounds

of paper. The pulp and paper making centers along the rivers of Maine and other New England states get additional supplies of pulp wood and pulp from the Scandinavian countries and Canada.

4.

When the Appalachian mountain slopes were covered with forests, the rivers which start here, had nearly as much water in the fall of the year as in the spring, because the forests would hold the snow and rains. In the region where the trees have been cut, the waters rush down the slopes in the spring of the year. In some years of heavy rains there are floods.

As the water rushes down the mountains, it carries with it much of the rich soil in which the forest grew. It leaves deep gullies in the mountain sides. Here and there the state and the United States governments have started to plant trees to hold the water and protect the New Englanders.

5.

A steady supply of water from forested mountains gives a steady supply of water power to the cities at the falls in the river. With the forests removed, in the spring the supply of water is large; in the fall it is small. Therefore the cities do not have the same amount of waterpower every season of the year. One of the fortunate cities is Holyoke on the Connecticut River. This river rises in northern New England where a few of the forests have been saved from the axe.

6.

As you stand outside a department store and watch the goods come in you can see the pianos, books and furniture are packed in wooden boxes. Butter, lard and peanut butter often come packed in wooden tubs. Flour, sugar and other similar articles come packed in paper sacks, but more often in cotton ones, because the price of paper has continued to rise until it is cheaper to buy cotton sacks than paper ones. The barrels in which vegetables arrive no longer have the thick staves which they had when mother and dad were children, but are made of thin strips. Stone, cement, steel and other materials are being used in the construction of buildings. Good wood is no longer used for fuel to heat homes, as it was in colonial days. Good wood has become too expensive.

Many cities in Maine support their people by making the many wooden articles we have mentioned.

7.

As you drive out in the country with mother and dad on Sunday, do you notice the difference in the air as you leave the city and pass the farmlands? As we discovered before, the people of New England make a living by manufacturing, therefore many of them live in crowded cities where there is little sunshine and fresh air. The forests of New England provide a place where the city people can go for their week ends and vacations. In the forests and lakes they can hunt and swim. Here and there in the White and Green mountains we find people camping. Here in the forests, those who live in the city can find sunshine and fresh air for better health.

8.

From what we learned in number four we can see why it is necessary that mountain slopes have forests. There are large parts of New England where the soil is poor and rocky, it would be much better in forest than in farm. Much of the cut-over and burned over areas should be planted in forests. Nearly 12,800,000 acres of New England are more suitable for forests than for crops.

In 1891 the government began to set aside land to be used for forests. Today we have for the good of all of the people of the United States about 150,000,000 acres of such land called National Forests.

The United States Forest Service which manages this land is trying to do the following:

A. Cut only as much timber as grows on the land each year. In that way we will always be able to get timber from these lands.

B. To plant trees in places where the trees have been cut down

C. To plant trees in places where the trees have been burned

D. To protect the National Forests from forest fires

The New England States are getting the help of the Forest Service in replanting their forests.

The children chose the following titles for the above.

1. Importing lumber is expensive
2. Maple sap is made into sugar and syrup
3. Paper is made from wood
4. Trees help prevent floods
5. Trees help make waterpower even all year
6. Many articles are made from wood
7. Sunshine and fresh air are necessary for health
8. The United States Forest Service helps replant forests

A PICTURE LIBRARY AND ITS USE

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Does the very wealth of illustrative material so easily available constitute a problem in your geography class? Those hundreds of pictures from rotogravure sections, magazines, advertising and travel literature, accumulated each year by you and your pupils, what do you do with them all after their temporary use in class? You may destroy them, but you probably don't because your conscience won't allow the destruction of a wealth of pictures, equaling and very often surpassing those of the textbook in size, photographic excellence, interest, timeliness, variety, and challenge. So you most probably store them away for future (?) use, and meanwhile you go on annually accumulating more and more, to the point of confusion, unwieldiness, and discouragement. And therein lies the problem of plenty.

One feeble attempt to solve this problem was to have the children mount the pictures in brown wrapping paper scrapbooks, but this arrangement was, of course, only partially and temporarily successful. The children's interest waned after looking at the scrapbooks once or twice. They retained few clear, worthwhile impressions, but rather too strong an impression of the unusual; there was no way to encourage critical examination, comparison, problem solving. The material was merely transferred from the cold storage of the boxes to the slightly less frigid atmosphere of the scrapbooks. But the scrapbooks were the first step in what developed into a practical plan which produced some good results. The next step was to cut up the scrapbooks (leaving of course the printed explanation with each picture), sort the pictures by countries, units, or topics. Next, carefully to select about thirty good pictures for a given country or unit, number each picture, and formulate an objective test to be answered from the pictures and the printed legends. The test, with some simple directions, is put on a card and together with the thirty pictures placed in a sturdy manila envelope. Following is a sample of the directions and a test used by a fifth grade.

SWITZERLAND

The best way to do this lesson is to look first at *all* the pictures and read over *all* the questions in order to get a general view of the lesson.

For some questions you need give only the number of the correct picture.

For the others you must give your answer and *also* the number of the picture where you found that answer.

In some cases you may have to decide which of several pictures is the *best* to choose.

1. How do the mountains provide a means by which the Swiss can make a living?
2. Which of the mountain scenes interest you most?
3. List five types of transportation provided for the convenience and pleasure of travelers in Switzerland. For each give the number of a picture that is a good example of that type.
4. What feature of the train on the scenic mountain line is especially designed for sightseers?
5. What is an advantage of electrified railroads in the long and numerous tunnels?
6. What country is most easily reached from Switzerland? What language would you expect to be spoken by most of the Swiss? What language second? Third? Trace a main railroad line of Europe that passes thru Switzerland. What is it called?

(Pictures included a transportation map bringing out the communications of Switzerland with the rest of Europe)

7. How do the Swiss get along with no coal of their own?
8. You have learned that Swiss industries produce valuable products from small amounts of raw material. Complete the following table, giving the number of a suitable picture to illustrate each industry.
   a) Cotton + Swiss skill =
   b) Silk + Swiss skill =
   c) Wood + Swiss skill =
   d) Fine metals + Swiss skill =
9. Choose a picture to illustrate this statement from your textbook: "It is customary for the men and older boys to drive the cattle to the higher pastures and remain there for the summer."
10. Choose a picture to illustrate this statement: "Even the smallest areas of grass are carefully mowed and the hay gathered and stored for use in winter."
11. Give the numbers of the pictures that illustrate these steps in the cheese industry.
    a) Making the cheese high in the mountains
    b) The finished product
    c) Exportation to foreign countries
12. Examine the picture of the little chalet and tell which of the following statements are true:
    a) It is probably used only during the summer season.
    b) There are stones on its roof as a protection from winds, and to hold the snow for warmth.
    c) Most of the material for its construction was brought up the mountain from the valley below.
13. Find the picture that might be the interior of such a chalet.
14. Is it true or false that electrical power is available for even very small villages?
15. Is it true or false that Switzerland has a program of forest conservation?
16. In what part of Switzerland do most of the people live?

(Pictures included a population map)

17. What is the only water way by which Swiss products can be shipped to the sea?
18. Find the picture that best illustrates each of the following:
    a) Timberline

b) Alp
c) Crevasse
d) Rhone Glacier
e) Matterhorn
f) St. Bernard Hospice
g) Simplon Tunnel

19. Name the city for each of the following:
a) City of the League of Nations
b) Fashionable winter sports center
c) Well located on the Rhine
d) Leading silk manufacturing center
e) The capital

20. After looking at all the pictures which four of the following do you think would be the busiest in Switzerland?
a) Superintendent of a steel mill
b) Manager of a hotel
c) Manufacturer of tractors and reapers
d) Manufacturer of oil derricks
e) Manufacturer of electrical equipment
f) Manufacturer of arms and munitions
g) Leader in international affairs
h) Exporter of grain
i) Importer of cacao

The type of question, the degree of difficulty, the amount of comparison, judgment, and selection required by your test and pictures depend, of course, on the grade and ability of your group. It is interesting gradually to add units requiring original thought and evaluation, and some research, and to have two or more pupils work on them together. The results are surprisingly satisfactory as the children come more and more to welcome the questions that challenge their skill in problem solving.

Your picture library in its envelopes, all labeled, can be kept in active circulation thruout the year. The children can check them out for home study, for review credits, for free periods at school, for make-up work. It is easy and worthwhile to keep a record of the tests satisfactorily completed by each pupil.

The hardest part in organizing a picture library of this kind is of course the beginning, altho the children can help a great deal in sorting, trimming, and mounting the pictures. You will select the pictures for the first units and make the tests. If you keep your questions purely objective and make accurate and complete answer keys a pupil helper can easily score them. You will find that for the general tests on the different countries the pictures are easily chosen and the tests readily take form, and before you know it, your pile of material is decreasing at an encouraging rate. After the

children become familiar with the plan they will begin to discover new topics and units, they will bring you not only pictures but, best of all, suggestions about them. Your envelopes can enclose organized work not only on countries and regions, but also on transportation, agriculture, manufactures, mining, races, flora and fauna, customs, costumes, dwellings, architecture, famous landmarks, nature's wonders, phases of physical geography, and an infinity of other topics, for the range is limited only by the children's interest and the scope of geography.

METHODS OF MOTIVATING GEOGRAPHY TEACHING

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In dealing with many geography classes of different intelligence levels it is necessary to employ different methods and means to arouse interest and to stimulate a desire on the part of the student to want to know more about the activities of man in that particular region or country. All groups of students do not respond in the same manner hence it is obvious that the teacher of geography must exercise considerable initiative.

The main purpose of motivation is to arouse interest. The intensity of this interest will reflect the quality of motivation and the teacher's skill in presenting it.

One method is to project on a screen pictures of children at play, at work, and in various types of activities, since children are interested in other children more than in the complicated activities of adults. Questions may be asked by the teacher as to the difference between their clothing, homes, and mannerisms and those whose pictures are being shown. Having aroused interest and comment, the teacher may then skillfully lead the child's thought to the adult field by comparing the way the adults dress, act, work, etc., with their own fathers and mothers. In this way the child is discussing things nearest and dearest to him, things he understands and appreciates. Additional pictures may bring out the type of homes, roads, schools, scenery, market places, vehicles, etc. The use of the projection lantern has the advantage of holding their concentrated attention on one picture at a time. There is less looking around the room, out of the window, whispering, and distraction.

Another method is to pass around reference books and to discuss the pictures of the country to be studied. It is more interesting where no captions are given since the child will have to be very observing to give a fairly intelligent dissertation. All kinds of questions will come to the mind of the child as he actually sees what the country is like, how it differs from ours and what the children, fathers and mothers are doing to make a living. The reading and assignments to follow bring out the answers to his questions. Once a child's curiosity or interest is aroused he will, of his own accord, try to find the answer, but first arouse his interest.

Another method of motivation is to pass around tourist pictures. These pictures, for obvious commercial reasons, are designed to arouse a desire to visit and see the country. The same underlying psychology is used for the adult as for the child. Tourist pictures stimulate questioning, and the desire to know more about that particular country, because they bring out the best the country has to offer.

Another method of motivation is to read a number of paragraphs from different books. These paragraphs are to be selected with one thing in mind—to present disconcerting data so the student will invariably be asking himself "If this condition is true then why should this or that exist?"

Still another method of arousing interest is to have a research panel before the class. Four or five students may do some preliminary research work on some phase of interest regarding the country to be studied, and then as an informal group before the rest of the class, discuss the subject or topic before them. The teacher should examine the questions to be asked, so that the purpose of the panel is not defeated thru any desultory discussion not pertaining to the subject.

I have found also that a good descriptive paragraph read to the class and followed by questions will bring good results. Questions of course should be of the type to arouse interest and a desire to do research reading.

The last method to be discussed is the one of using maps, graphs, and diagrams. When graphs and diagrams are used to show the value of products and the diversification of man's activities, it is always a good thing to emphasize the value of the products as well as to bring up the question of why this or that condition is true.

The superimposing of maps one on another is one of the most effective of the methods discussed so far. For instance we may have

the following maps to use, a physical map, rainfall, temperature, vegetation, products and industries, and a population map.

Using a population map we may show where the population is dense. Then we superimpose a temperature map on the population map and we may find that the temperature is not unlike our own—suitable to white people. Next we superimpose a rainfall map which may show us that there is neither a scarcity nor an overabundance of rain for the dense population. We may by superimposing a rainfall and physical map on a vegetation map find out the reason for dense or sparse vegetation. Several maps may, at will, be superimposed on any other map to bring out the reason for the conditions being studied. All this helps to create and arouse interest, which is exactly what the geography teacher wants, in order to follow thru and get a problem for the country or region to be studied.

These methods are varied of course to suit the particular group present. The superimposing of maps and making deductions work well with a high intelligence group whereas pictures appeal more to the lower intelligence group. The geography teacher should plan her or his work carefully and by good preparation help to guide the students' thoughts along the paths desired. Poor preparation, or a haphazard motivation, can be catapulted into a colossal failure inside of two minutes. It is always a good thing in geography motivation to carefully plan your work—then work your plan.

INTEREST-STIMULATING DEVICES

1. Vocabulary

When we studied the continent of Africa, many new concepts were taught, and the child had a vast number of new names added to his vocabulary. To help make the review process an interesting one, the children were asked to make an alphabet, using any of the words in their vocabulary to fit each letter. Every letter had to begin the name of a word studied, and each word had to be accompanied by a phrase stating a fact.

Examples: 1. U is for Union of South Africa, Great Britain's dominion in the continent.

2. S is for South Africa, where the early Dutch came.

3. T is for Timbuctoo, a town in the southwestern part of the Sahara.

This review became an integrated piece of work because it involved the use of English, art, and reading. Each pupil needed to know correct spelling and grammatical construction. Couplets in rhyme were undertaken by some. In art work there was the making of letters, the printing of words in the factual phrase, and picture illustrations. Reading for further knowledge on subjects which were found to be of interest became an integral part of the work.

2. Post Card

Some countries lend themselves readily to a post card review. After studying Chile, using its physical and climatic regions of the north, central, and south parts as a basis, we decided to make post card pictures on each part of the country visited. We recalled that in making trips to new regions, we wanted to buy post cards or take our camera snapshots of interesting places which we had seen. Manila paper was cut to post card size, and views of nitrate regions, sheep ranches, lumber camps, fruit orchards, etc., were drawn and colored.

3. Advertisement

The study of the continent of South America was completed at the time that steamship companies were advertising cruises to lands of the Caribbean and South America. We studied these "ads" from such papers as the *Chicago Tribune* and *New York Times*, and decided that we, too, could make advertisements. The results were splendid. Size of advertisements was not limited, but many kept theirs to 9 x 12, or smaller. Natives in costume, llamas, mountains, ships, Sugar Loaf, and many other topics became the basis of the "ad." Phrases describing places in the pictures were very appropriate, and a credit to the student.

CLARA M. SODKE

Junior High School
Wausau, Wisconsin

A Game for Review

This is modeled after a popular radio program and serves to make reviewing more interesting. When we have finished a unit, each student makes out a list of five questions with the correct answers and hands them in. A committee checks the questions in order to select the best ones and to see that there will be no duplicates. A "professor" is appointed to conduct the question bee. There are five contestants in a group; each one of whom has an opportunity to answer five questions. Each in turn chooses a question from the box and hands it to the "professor," who reads the question and waits for an answer. One hundred points are given for each correct answer, and fifty is given if the answer is half right. A score keeper marks the scores on the board.

AUDREY WRIGHT

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Mt. Vernon, Ohio

EDITORIAL NOTES AND NEWS

A solarium has recently been provided for miners in the model mining town of Boliden, near the Arctic Circle in Sweden. In a chamber equipped with powerful quartz lamps and infra-red ray lamps, as many as fifteen at a time may take light baths, especially in the long winter, to make up for the lack of sunlight.

According to a recent United States Department of Commerce report, the export of scrap iron and scrap steel from the United States has increased from the first recorded exportation in 1896, valued at $11,389, to $80,000,000 in 1937. Notable, also, is the increase in the price of scrap which has advanced from an average of $8.80 a ton in 1933 to $19.90 a ton in 1937. Large as our exports of scrap have been in the past four years, they total only 8 per cent of our own domestic consumption. Japan has been our largest purchaser and still leads in 1937, followed in order by the United Kingdom, Italy, Poland, Canada, and the Netherlands.

Cantaloup No. 45 now dominates the spring cantaloup market. In the spring of 1935 there was only a quarter-acre experimental plot of this variety. A fall crop was then grown for seed. In 1936 the Imperial Valley growers planted 10,000 acres of No. 45, and the following year they doubled the acreage. Arizona growers are favoring the same variety. The irrigated Imperial Valley and Salt River Valley normally produce more than half of all our early commercial melons. No. 45 is favored because it can be vine-ripened, thus insuring exceptional flavor, and at the same time, if precooled before shipment, remains firm for a few days after completing a transcontinental trip that may take nine days. In addition, it is resistant to mildew. This disease almost ruined the Imperial Valley crop and led to the ten-year breeding program that finally resulted in the present variety.

The National Council of Geography Teachers will again co-operate with the National Education Association as its annual meeting to be held in New York City, June 26-30, 1938.

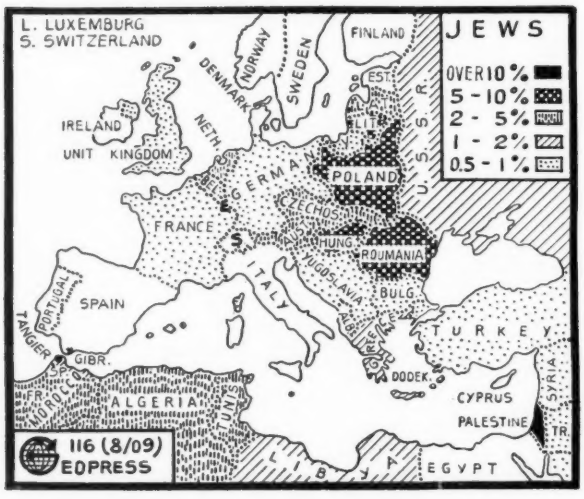
On Monday afternoon, June 27 at 3:00 P.M., there will be a round table on Geographic Education, a joint meeting with the Department of Secondary Education, in the American Museum of Natural History.

On Tuesday and Wednesday afternoons, June 28 and 29, two geography sessions dealing with modern content, techniques, materials and programs in the new geographic education will be held. These discussions will consider phases at the elementary level, secondary level, both junior and senior high, and of teacher education and adult education.

Functionally selected teaching and learning materials of true geographic quality will be exhibited.

Detailed programs for these three sessions can be obtained from Mrs. Erna Grassmuck Gilland, Chairman, Educational Relations Committee, California, Pennsylvania.

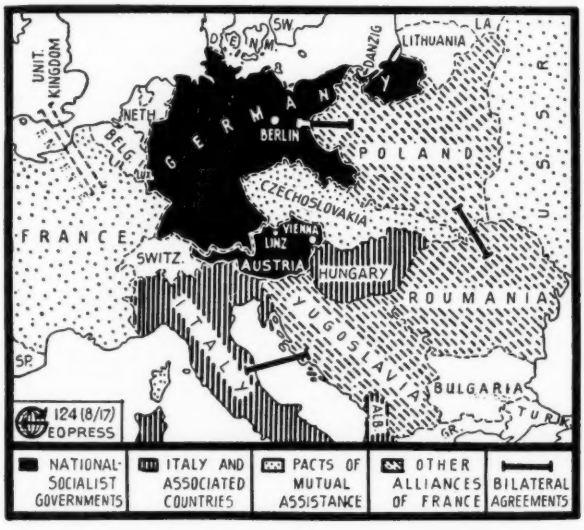
Ever since January, 1934, thru international train service between Chile and Argentina has been impossible due to the destruction, by a landslide, in the Argentine Andes of a part of the Trans-Andean Railway. The connection over the destroyed section is by highway motor vehicle. During the past year the Argentine government has made an agreement with this British operated railway to reconstruct the missing section so that uninterrupted train service may be resumed.



We hear a great deal about the so-called "problem of the Jews in Europe and the Near East." The impression commonly prevails that Jews constitute a large proportion of the population in numerous countries but especially in Germany. The accompanying map should help to clarify the mental picture. It is rather interesting to note that there are only about 505,000 Jews in Germany out of a population of 67½ million, or 0.7 per cent. These figures make one wonder why the Germans should be so disturbed over such a small number of Jews. Even the acquisition of Austria has merely changed the percentage to 0.9.

It is estimated that there are about 16 million Jews in the world and about 9½ million are in Europe. The European countries having the largest percentage of Jewish population are Poland (9.8), Lithuania (6.2), Rumania (also spelled Roumania) (5.4), Hungary (5.1), Gibraltar (5.1), and Latvia (4.8). In most European countries the proportion is very small. Palestine has the highest percentage (27.7) of Jewish population and the International Zone of Tangier ranks second (11.7).

Europe is, indeed, in an advanced stage of governmental transition. The Facist, Nazi, and Communist types represent so-called socialist forms, tho the government of U.S.S.R. really comes nearer being state capitalism. Numerous alliances or "understandings" exist and the socialist types constitute a huge area extending from north to south thru central Europe. To this block may be added Spain. Czechoslovakia is isolated from the democracies. By the acquisition of Austria, Germany has become the largest country of Europe (except U.S.S.R.) and has the largest population.



DR. GEORGE B. CRESSEY of Syracuse University, following his return from U.S.S.R. has lectured at a number of universities including, Cornell, Wayne, Ohio State, Cincinnati, Denison, Vassar, Penn State, Clark, and Harvard. During the coming summer he will teach at Western Reserve and at Michigan.

Distribution of the world gold reserves, at the beginning of 1938, presents a very interesting picture. The estimated reserves of the world, at that time, were 757,696,000 Troy ounces. Of this amount nearly half is in the United States. Great Britain and France rank next altho far below the reserves in America. United States, Great Britain and France together possess approximately three-quarters of the world's total gold reserves. Next come U.S.S.R., Netherlands, Switzerland and Belgium. Compared with last year, Netherlands has doubled its reserve and has advanced from ninth to fifth place. In contrast, Spain (Barcelona Government) has dropped to fifth place and Japan now ranks with British India. It is also interesting to note that among the Great Powers, Italy and Germany have no gold reserves worth mentioning, and during the course of the last five years the gold reserve of Italy has decreased by two-thirds and that of Germany by five-sixths. The percentage of the world reserves held by leading countries is shown in the following table.

1. United States	48.1
2. Great Britain	15.4
(British Empire including the Dominions and India)	18.0
3. France	9.7
4. U.S.S.R.	4.5
5. Netherlands	3.5
6. Switzerland	2.9
7. Belgium	2.3
8. Argentina	2.3
9. Spain (Barcelona Government)	1.3
10. British India	1.0
11. Japan	1.0
12. Sweden	0.9
13. Canada	0.8
14. Union of South Africa	0.8

During January, 1938, the Census Bureau initiated a project, using security wage personnel, to measure the township (minor civil division) areas of the states of Iowa, Maryland, Massachusetts, Michigan, Minnesota, New York, North Dakota, Pennsylvania, West Virginia and Wisconsin. It is anticipated that all of the township areas of the United States will be measured for the Census of 1940.

Since 1881 the Bureau of the Census has published the square mile areas of all counties, revised to conform to conditions existing at the time of each census. Geographers and others have made intensive use of these area figures in comparing counties of contrasting size on a per square mile or per acre density basis. Many still consider county density figures adequate for the sparsely populated portions of the United States, but it is generally accepted that, in the eastern states and within the metropolitan districts of the principal cities, there is an urgent need for the refinement of township statistics.

Complete records have not been preserved showing what limits were used in 1881 in the basic measurement of the state areas and the area of the United States. Therefore, this project will, undoubtedly, publish area figures which do not conform to those accepted at present. This is unavoidable since it is not known exactly which coastal embayments were included or excluded in the original measurements.

It is anticipated that these township areas, which will form an addition to future decennial census publications, will be used in the next census for the preparation of a large scale population density map and a detailed statistical atlas of the United States.

The *News Letter,* a two page bulletin, published by the Bureau of Educational Research, Ohio State University, Columbus, Ohio, has suggestions to teachers for an effective use of the radio, press, and motion picture. It also cites specific schools and the programs they are initiating in which these agencies are functioning.

GEOGRAPHICAL PUBLICATIONS

Andrew W. Lind. **An Island Community.** 337 pages, 32 illustrations, 34 tables, and an index. University of Chicago Press, Chicago, 1938. $3.00.

An *Island Community*, by Andrew W. Lind, of the University of Hawaii, describes the ecological succession of man in Hawaii. The volume, conceived as a study in human ecology, was made possible by the great diversity of racial stocks residing in the territory.

First the author describes the original environment of the islands, the influx of native Hawaiians, and their discovery by Europeans, and next he considers the historical succession of industries carried on as: sandalwood, whaling, diversified crops and specialized plantation agriculture. Now the limits of farming have been reached except for more intensive land utilization. Increase in output of crops has come from the control of insects and plant diseases, the use of fertilizer, selection of the best types of sugar cane and pineapples for planting and other skilled applications of scientific methods. The life of the native Hawaiians and their system of land control was described, and then the methods by which the land passed into the hands of the *haoles*, or whites. Next follows the story of the expansion of trade and the development of the plantation era.

The plantations needed labor that the Hawaiians were both unable and unwilling to furnish. As a result the land owners brought in labor from China, Portugal, especially the Azores Islands, Puerto Rico and other places. The influx of Chinese was barred when the Republic of Hawaii joined the United States in 1898 and Japanese then were encouraged to enter to the number of 180,000. When Japanese exclusion became effective Filipinos were next hired and form the second largest racial group in Hawaii.

Five large financial concerns called sugar factors, control a large majority of the export, import, and domestic business of Hawaii. These firms buy and sell goods at both wholesale and retail, manage plantations, serve as representatives of steamship lines and in general dominate business affairs in the islands.

In general the book is accurate and carefully written. Natural geographic factors are not as much emphasized as is customary among geographers. Obviously human relations and man-created influences were of more interest to the author than environmental factors. Very little attention is paid by the author to the remarkable applications of science to the production of cane sugar and pineapples in Hawaii. In brief, *An Island Community* is a careful and scholarly contribution to the social and labor problems in Hawaii, but, the book is not an all around treatise on the geographic factors affecting the Territory. Nevertheless it will be found a useful reference book by those interested in Hawaiian economic life and peculiar racial problems.

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